DOLI Virginia Occupational Safety and Health VOSH

VOSH PROGRAM DIRECTIVE: 12-251B **ISSUED**: **June 1, 2006**

SUBJECT: **Safety Standards for Steel Erection, Subpart R:**

I. §§1926.750 through 1926.759, 1926.760 (d) and (e), and 1926.761, Amendment to Subpart M, §1926.500;

II. Virginia Unique Standard for Fall Protection in Steel Erection, 16 VAC 25-145;

III. Revocation of Slip Resistance of Skeletal Structural Steel, §1926.754(c)(3) and Appendix B

A. **Purpose**.

This directive transmits to field personnel **Change I**: the 2001 revisions to both the Steel Erection standard and 1926.500; **Change II**: the Virginia unique standards for fall protection in steel erection at 16VAC25-145; and **Change III**: the revocation of slip resistance of skeletal structural steel, §1926.753(c)(3).

This Program Directive is an internal guideline, not a statutory or regulatory rule, and is intended to provide instructions to VOSH personnel regarding internal operation of the Virginia Occupational Safety and Health Program and is solely for the benefit of the program. This document is not subject to the Virginia Register Act or the Administrative Process Act; it does not have general application and is not being enforced as having the force of law.

B. **Scope**.

This directive applies to all VOSH personnel.

C. **References**.

66 FR 5195 (January 18, 2001).
66 FR 37137 (July 17, 2001); OSHA Memorandum 01-04 (July 18, 2001).
16 VAC 25-145, Virginia Unique Safety Standards for Fall Protection in Steel Erection (eff. Jan.15, 2004).
71 FR 2879 (January 18, 2006).

D. **Cancellation**.

VOSH Program Directive 12-203 (February 15, 1996).
VOSH Program Directive 12-251 (November 1, 2001).
VOSH Program Directive 06-004A (June 1, 2000).
VOSH Program Directive 12-251A (May 1, 2005).

E. **Action**.

Directors and Managers shall ensure that field personnel understand and comply with federal Subpart "R", Steel Erection, as adopted, and the Virginia unique standard which replaces federal 1926.760 (a), (b), & (c).

F. **Effective Date**.

CHANGE I: January 18, 2002.
CHANGE II: January 15, 2004.
CHANGE III: June 15, 2006.

G. **Expiration Date**.

Not Applicable.

H. Background and Summary.

1. Change I: Federal Subpart "R" except 1926.760 (a), (b), and (c).

The previous steel erection standard had been in place with minor changes since OSHA's inception 30 years ago. This complete revision provides greater protection and eliminates ambiguity and confusion. To develop this standard, federal OSHA employed negotiated rulemaking using an advisory committee, the Steel Erection Negotiated Rulemaking Advisory Committee (SENRAC).

a. Section 1926.500: Fall Protection for Construction NOT in Steel Erection.

In addition to revisions to the federal Steel Erection standard in Subpart "R", the Fall Protection standard in subpart M was also amended. Part 1926.500(a)(2)(iii) was amended to clarify that fall protection in steel erection is covered exclusively by Subpart "R", with the exception of towers and tanks. Section 1926.500(a)(2)(v) explains that §1926.105 covers employees engaged in the erection of tanks and communication and broadcast towers. Section 1926.500(a)(3)(iv) was revised to specifically exclude the erection of tanks and communication and broadcast towers from the scope of §1926.502. The erection of tanks and communication and broadcast towers will continue to be covered by §1926.104.

b. Subpart "R": Steel Erection Standards. Subpart "R" of Part 1926 was revised to enhance protections provided to workers engaged in steel erection and to update the

general provisions that address steel erection. The final rule sets performance-oriented criteria, where possible, to protect employees from steel erection related hazards such as working under loads; hoisting; landing and placing decking; column stability; double connections; hoisting; landing and placing steel joists; and falls to lower levels. To effectuate this, the final rule contains requirements for hoisting and rigging, structural steel assembly, beam and column connections, joist erection, systems-engineered metal building erection, fall protection and training.

The revised final steel erection standard modified and strengthened the standard it replaced in a number of areas. Key provisions of the revised steel erection standard include:

Site Layout and Construction Sequence

- Requires certification of proper curing of concrete in footings, piers, etc. for steel columns.
- Requires controlling contractor to provide erector with a safe site layout including pre-planning routes for hoisting loads.

Site Specific Erection Plan

- Requires pre-planning of key erection elements, including coordination with controlling contractor before erection begins, in certain circumstances.

Hoisting and Rigging

- Provides additional crane safety for steel erection.
- Minimizes employee exposure to overhead loads through pre-planning and work practice requirements.
- Prescribes proper procedure for multiple lifts (Christmas-treeing).

Structural Steel Assembly

- Provides safer walking/working surfaces by eliminating tripping hazards and minimizes slips through new slip resistance requirements.
- Provides specific work practices regarding safely landing deck bundles and promoting the prompt protection from fall hazards in interior openings.

Column Anchorage

- Requires 4 anchor bolts per column along with other column stability requirements.
- Requires procedures for adequacy of anchor bolts that have been modified in the field.

Beams and Columns

- Eliminates extremely dangerous collapse hazards associated with making double connections at columns.

Open Web Steel Joists

- Requirements minimizing collapse of lightweight steel joists by addressing need for erection bridging and method of attachment.
- Requirements for bridging terminus anchors with illustrations and drawings in a non-mandatory appendix (provided by Steel Joist Institute)
- New requirements to minimize collapse in placing loads on steel joists.

Systems-Engineered Metal Buildings

- Requirements to minimize collapse in the erection of these specialized structures which account for a major portion of steel erection in this country.

Falling Object Protection

- Performance provisions that address hazards of falling objects in steel erection.

Fall Protection

- Federal §1926.760 (a), (b) and (c) are not adopted. See the attached Virginia unique regulation for enforcement of fall protection covered by these paragraphs.

Training

- Requires qualified person to train exposed workers in fall protection.
- Requires qualified person to train exposed workers engaged in special, high risk activities.

Structures excluded from coverage under the scope of the standard are as follows:

- steel electrical transmission towers;
- steel communication and broadcast towers;
- steel water towers;
- steel light towers;
- steel tanks; and
- reinforced and pre-cast concrete structures

Although the Safety and Health Codes Board adopted the almost all of federal OSHA's revised Safety Standards for Steel Erection as §1926.750 through §1926.761, upon the recommendation of the Department, **the following were not adopted by the Board:**

§1926.760(a) setting a 15-foot fall protection requirement for steel erection;

§1926.760(b) providing "Connectors" with fall hazard protection at 15-30 feet above a lower level;

§1926.760(c) permitting the use of Control Decking Zones (CDZ)

Therefore, the above three subsections are not enforceable.

The Board did, however, adopt subsections (d) and (e) of §1926.760, where (d) provides

criteria for fall protection equipment to meet requirements in §1926.502; and (e) requires that custody of fall protection equipment remain in the area where steel erection activity has been completed.

On October 18, 2001, the Safety and Health Codes Board meeting adopted federally-identical changes to this final rule, with an effective date of January 18, 2002.

2. Change II: Virginia Unique Regulation for Fall Protection in Steel Erection.

At its October 18, 2001 meeting, the Safety and Health Codes Board adopted most of federal OSHA's revised Safety Standards for Steel Erection at 66 FR 5195 and 66 FR 37137 as §§1926.750 through 1926.761 and the amended §1926.500, covering Fall Protection, with an effective date of May 1, 2005.

Upon the recommendation of the Department, paragraphs (a), (b) and (c) of §1926.760 of the federal rule were not adopted. These paragraphs dealt with fall protection requirements for steel erection workers generally, and, specifically for "Connectors," and employees working in "controlled decking zones" (CDZ).

In the alternative, VOSH sought Board approval at that time to continue to use its administrative policy of enforcing federal identical standards, §§1926.28(a) and 1926.105(a), to provide 10-foot fall protection for steel workers, except for employees working as "connectors." In addition, controlled decking zones (CDZ) would continue to be prohibited. After considering the Department's request to continue its administrative policy of enforcement, the Board chose to memorialize the 10-foot height requirement policy of the Department into regulation so that rather than continue the administrative policy, these changes would be made permanent in regulation at 16 VAC 25-145.

This regulatory language, adopted by the Board and effective January 15, 2004, **requires protection for steel erection workers from falls from heights starting at 10 feet above a lower level** (i.e., working surface) not at the federal height of 15 feet. VOSH has a **singular exception to the 10-foot fall protection requirement for employees working as "Connectors."** A "Connector" is defined in § 1926.751 as "…an employee who, working with hoisting equipment, is placing and connecting structural members and/or components."

The exception for Connectors is based on VOSH's determination that during the interval when structural steel beams are being hoisted into position for assembly and joining, a greater hazard may exist if Connectors are tied off rather than giving them freedom of movement to avoid accidental contact with the moving steel structural pieces as they are being placed into position for assembly. This language provides Connectors with the option of utilizing a personal fall arrest system or not when steel is being lifted in the air, if they determine that a greater hazard of injury exists from the swinging steel.

Although **controlled decking zones (CDZ) remain prohibited**, the VOSH unique standard provides that access to leading edge decking operations is limited to only those employees engaged in leading edge work, as is provided in the federal standard.

In addition, the boundaries of a leading edge decking operation shall be designated and clearly marked. These requirements provide a means of fall protection by restricting access to a leading edge decking area where a fall distance of up to 30 feet could exist for employees not utilizing a personal fall arrest system or other conventional form of fall protection.

A non-mandatory Appendix to the standard entitled "Use of Control Lines to Demarcate Leading Edge Decking Operations" provides guidance to employers on how to limit access to leading edge decking operations. The draft Appendix is substantially similar to and would replace the current Appendix D to the Steel Erection Standard entitled "Appendix D to Subpart R -- Illustration of the Use of Control Lines to Demarcate Controlled Decking Zones (CDZs): Non-mandatory Guidelines for Complying with §1926.760(c)(3)."

[*NOTE:* *This unique regulation is consistent with previous VOSH administrative policy whereby 1926.28(a) and 1926.105(a) were enforced to provide 10-foot fall protection for steel workers, except for employees working as Connectors.*]

3. **<u>Change III: Revocation of Slip Resistance of Skeletal Structural Steel</u>**.

The revised final rule for steel erection (subpart "R") addresses the hazards that have been identified as the major causes of injuries and fatalities in the steel erection industry. The slip resistance provision at §1926.754 (c)(3) was not intended to be the sole or primary means of protecting workers from fall hazards. Rather, it was intended to complement other requirements in the steel erection standard as part of a collective strategy for reducing these fall-related injuries and fatalities.

The basis of the slip resistance requirement in §1926.754(c)(3) is that the coating used on the structural steel walking surface must have achieved a minimum average slip resistance of 0.50 [when wet] when measured, using the appropriate American Society for Testing and Materials (ASTM) standard test method. In the preamble to the final rule, OSHA noted that the two ASTM standard test methods had not yet been validated through statements of precision and bias, documentation that the test method, in laboratory tests, has been shown to have an acceptable degree of repeatability and reproducibility.

Representatives of the coatings industry indicated that it would take time to develop new coatings to meet the requirement. Therefore, federal OSHA delayed the provision's effective date until July 18, 2006, because the evidence in the record indicated that it was reasonable to expect these developments to be completed by that date. (71 FR 2879)

The slip-resistance provision was challenged in the U.S. Court of Appeals for the D.C. Circuit by the Steel Coalition and the Resilient Floor Covering Institute. On April 3, 2003, OSHA entered into a settlement agreement with those petitioners. OSHA agreed to provide the petitioners and other interested parties with a further opportunity to present evidence on the progress that has been made on slip resistant coatings and test methods. OSHA agreed to then evaluate the evidence and issue a final rule, not later than January 18, 2006, reaffirming, amending, or revoking the requirements in §1926.754(c)(3).

Subsequently, on July 15, 2004, OSHA conducted a limited reopening of the rulemaking record, as part of a settlement to resolve legal challenges to the slip resistance provision. OSHA asked for comments on whether suitable and appropriate test methods and slip–resistant coatings could reasonably be expected to be available by July 2006. In the settlement agreement, OSHA also committed to publishing a notice by January 18, 2006, reaffirming, amending, or revoking the provision. On January 18, 2006, OSHA decided to revoke the requirements in §1926.754(c)(3). (71 FR 2879)

At the time the final rule was issued, ASTM had developed testing methods for two testing machines; however, under ASTM rules, these standards were provisional, pending the completion of precision and bias statements for each. A precision and bias statement is documentation that the test method, in laboratory tests, has been shown to have an acceptable degree of repeatability and reproducibility. OSHA believed that completion of the precision and bias statements was critical to validate these test methods before they could be deemed acceptable for measuring slip resistance under the Standard. (71 FR 2880)

ASTM's technical developments, which needed to occur for employers to comply with the provision by its effective date of July 18, 2006, have not occurred. The ability to comply with the slip resistance provision depended upon two technical developments: (1) completed industry protocols for slip testing equipment; and (2) the availability of suitable slip resistant coatings.

Rulemaking comments indicated that the test methods were not likely to be completed by the July effective date because ASTM would not have completed the required validation process. Comments also indicated that ASTM would likely withdraw the test methods altogether because they are brand-specific rather than generic. Lack of completed test methods delayed the development of suitable slip resistant coatings. Additionally, there had not been adequate testing of coatings to determine whether they have sufficient durability in the variety of applications in which they will be used, especially in corrosive environments.

The revoked testing methods specified in Appendix B of 1926 subpart R (Steel Erection) are:

- Standard Test Method for Using a Portable Inclinable Articulated Strut Slip Tester (ASTM F1677-96); and

- Standard Test Method for Using a Variable Incidence Tribometer (ASTM F1679-96)

At its meeting on March 7, 2006, the Safety and Health Codes Board adopted the federal-identical revisions to this final rule, with an effective date of June 15, 2006.

C. Ray Davenport
Commissioner

Attachments:	Change I:	66 FR 5195 (January 18, 2001) Subpart "R" 66 FR 37137 (July 17, 2001) Delayed Effective Dates for Subpart "R"
	Change II:	16 VAC 25-145 Virginia Unique Standards for Fall Protection in Steel Erection
	Change III:	71 FR 2879 (January 18, 2006)
E-Attachments:	Change I:	http://www.osha.gov/FedReg_osha_pdf/FED20010118.pdf http://www.osha.gov/FedReg_osha_pdf/FED20010717.pdf
	Change II:	http://leg1.state.va.us/000/reg/TOC16025.HTM#C0145
	Change III:	http://www.osha.gov/FedReg_osha_pdf/FED20060118.pdf

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CHANGE I

Safety Standards for Steel Erection, Subpart R, §§1926.750 through 1926.759, 1926.760(d) and (e) and 1926.761, Revised Final Rule; and Amendment to Subpart M, Fall Protection, §1926.500

As Adopted by the

Safety and Health Codes Board

Date: October 18, 2002

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

Effective Date: January 18, 2002

16 VAC 25-175-1926.750 through 1926.761, Safety Standards for Steel Erection, Subpart R, §§1926.750 through 1926.759, 1926.760(d) and (e) and 1926.761; and
16 VAC 25-175-1926.500, Fall Protection, Subpart M, §1926.500

When the regulations, as set forth in the Safety Standards for Steel Erection, Subpart R, §§1926.750 through 1926.761; and in the amendment to Fall Protection, Subpart M, §1926.500, are applied to the Commissioner of the Department of Labor and Industry and/or to Virginia employers, the following federal terms shall be considered to read as below:

Federal Terms	VOSH Equivalent
29 CFR	VOSH Standard
Assistant Secretary	Commissioner of Labor and Industry
Agency	Department
January 18, 2002	January 18, 2002

CHANGE II

Virginia Unique Safety Standards for Fall Protection in Steel Erection, Construction Industry, 16 VAC 25-145 Final Regulation

As Adopted by the

Safety and Health Codes Board

Date: 3 November 2003

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

Effective Date: 15 January 2004

16 VAC 25-145, Safety Standards for Fall Protection in Steel Erection in the Construction Industry

Fall Protection for Steel Erection

16 VAC 25-145

§10 Application of Regulations

Notwithstanding any other provisions to the contrary relating to fall protection and controlled decking zones (CDZ) in the regulation of steel erection in 16 VAC 25-175-1926.500; 16 VAC 25-175-1926.751 through 16 VAC 25-175-1926.759; 16 VAC 25-175-1926.761; and Appendix D to Subpart R- Illustrations of the Use of Controlled Decking Zones (CSZs): Non-mandatory guidelines for complying with §1926.760 (c))(3); the provisions of 16 VAC 25-145 shall take precedence.

§ 20 General Requirements

A. Except as provided by paragraph C. of this section, each employee engaged in a steel erection activity who is on a walking/working surface with an unprotected side or edge of 10 feet or more above a lower level shall be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems.

B. Perimeter safety cables. On multi-story structures, perimeter safety cables shall be installed at the final interior and exterior perimeters of the floors as soon as the metal decking has been installed.

C. Connectors and employees working in leading edge decking operations shall be protected from fall hazards as provided in Sections 30 and 40 respectively.

§ 30 Connectors

Each connector shall:

1. Be protected in accordance with § 20 of these requirements from fall hazards of 10 feet or more above a lower level; except when structural members are being lifted for connection, when it is considered by the connector to be a greater hazard to utilize fall protection in accordance with § 20, than to have freedom of movement to avoid accidental or inadvertent contact with structural members being hoisted to be placed and connected into position.

2. Have completed connector training in accordance with § 1926.761; and

3. Be provided, at heights at or above 10 and up to 30 feet above a lower level, with a personal fall arrest system, positioning device system or fall restraint system and wear the equipment necessary to be able to be tied off; or be provided with other means of protection from fall hazards in accordance with subsection 20 A. of these requirements.

§40 Decking

A. The use of controlled decking zones is prohibited.

B. Each employee working at the leading edge of decking operations shall be protected in accordance with subsection 20 A. of these requirements from fall hazards of 10 feet or more above a lower level.

C. Access to the leading edge of decking operations shall be limited to only those employees engaged in leading edge work.

D. The boundaries of a leading edge decking operation shall be designated and clearly marked. The operation shall not be more than 90 feet (27.4 m) wide and 90 (27.4 m) feet deep from any leading edge. The operation shall be marked by the use of control lines or the equivalent. Examples of acceptable procedures for demarcating can be found in Appendix A.

E. Each employee working in a leading edge decking operation shall have completed training in accordance with §1926.761.

F. Unsecured decking shall not exceed 3,000 square feet (914.4 m 2).

G. Safety deck attachments shall be performed from the leading edge back to the control line and shall have at least two attachments for each metal decking panel.

H. Final deck attachments and installation of shear connectors shall not be performed in areas where leading edge decking operations are being conducted.

§50 Illustration of the Use of Control Lines to Demarcate Leading Edge Decking Operations: Non-mandatory Guidelines for Complying with 16 VAC 25-145-40.C.

A. When used to control access to areas where leading edge and initial securement of metal deck and other operations connected with leading edge work are taking place, the work area is defined by a control line or by any other means that restricts access.

1. A control line is erected not less than 6 feet (1.8 m) nor more than 90 feet (27.4 m) from the leading edge.

2. Control lines extend along the entire length of the unprotected or leading edge and are approximately parallel to the unprotected or leading edge.

3. Control lines are connected on each side to a guardrail system, wall, stanchion or other suitable anchorage.

B. Control lines consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

1. Each line is rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1.0 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) from the walking/working surface.

2. Each line has a minimum breaking strength of 200 pounds (90.8 kg).

CHANGE III

Safety Standards for Fall Protection in Steel Erection:

Revocation of Slip Resistance of Skeletal Structural Steel, §1926.754(c)(3); Final Rule

As Adopted by the

Safety and Health Codes Board

Date: March 7, 2006

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

Effective Date: June 1, 2006

16 VAC 25-175-1926.754, Safety Standards for Steel Erection

When the regulations, as set forth in the amended final rule to 16 VAC 25-175-1926.754, Safety Standards for Steel Erection in Fall Protection: Slip Resistance of Skeletal Structural Steel, §1926.754(c)(3), are applied to the Commissioner of the Department of Labor and Industry and/or to Virginia employers, the following federal terms shall be considered to read as below:

Federal Terms	VOSH Equivalent
29 CFR	VOSH Standard
Assistant Secretary	Commissioner of Labor and Industry
Agency	Department
January 18, 2006	June 1, 2006